THROMBOSIS OF THE MIDCEREBRAL ARTERY CAUSING APHASIA AND HEMIPLEGIA.[1]

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REMARKS ON CEREBRAL SKIAGRAPHY.

By G. E. Pfahler, M.D.

The point to which we wish to direct attention in the following report is the usefulness of skiagraphy in diagnosing cerebral disease and in locating the lesion. The importance of the method in tumor of the brain is well established. It probably will become of great value in the differential diagnosis of so-called uræmic hemiplegia, in which there is no gross organic lesion, from hemorrhage and thrombosis. It may possibly prove to be an aid in differentiating between the two last conditions by means of the different location of the shadows, hemorrhage usually affecting the striate artery, thrombosis often of the main trunk as well as its branches. The patient's history is as follows:

R. C., a white woman, aged sixty-seven years, was admitted to the Philadelphia Hospital in February, 1901. She had a right-sided hemiplegia and was aphasic. We learned but little of her previous history. Thirty years before her admission she suddenly lost power on the right side and became speechless. After several months sufficient power returned in the leg to enable her to walk a little, but speech never returned. Ever since the onset of the palsy epileptiform convulsions have recurred at long and irregular intervals.

When examined, the day after her admission, she could stand alone and, with the aid of a cane, walk a little. The gait was very hemiplegic. The right arm was completely and absolutely paralyzed. There was very slight palsy of the lower part of the face and none of the tongue. The right leg was slightly rigid. The right shoulder was very stiff, the forearm rigidly flexed upon the arm, but the wrist and fingers were relaxed. Passive movement of the right arm caused pain in the elbow and shoulder. The left knee-jerk was normal, the right increased. Ankle clonus and Babinski's reflex were present on the right side. There was slight wasting of the right arm from disuse, but no neurotic atrophy. Tactile sensibility could not be determined on account of the inability of speech. Sensibility to pain was certainly preserved. Her only speech was the recurrent utterance "no, no, no—no, no." This was expletive, not intellectual. It was spoken on every attempt to speak, and I am sure that sometimes it was uttered unconsciously in direct consequence of some external stimulus without any willed effort. It probably, therefore, was, in the latter case, not even emotional, but purely reflex. She showed by gestures indicating their uses that she recognized the nature of familiar objects by sight, but of course she could not name them. She did not recognize written or printed words at all. She certainly recognized letters to be such and seemed to know the specific meaning of four or five. She recognized the nature and uses of familiar objects put in her left hand, but with the right hand she recognized nothing. The significance of this could not be determined owing to the impossibility of discovering the condition of tactile, weight, thermal, and space sensibility. It may have been caused by a disturbance of sensibility or been the result of a true cortical tactile amnesia. She could not write at all either from dictation or copy. She was not completely word deaf. She obeyed all simple verbal commands even when great care was taken that she should not be able to guess the meaning of the order from my gestures. Complex commands requiring long sentences to give she did not understand and did not obey. She could not understand any conversation except the simplest phrases. There was however, as I have said,

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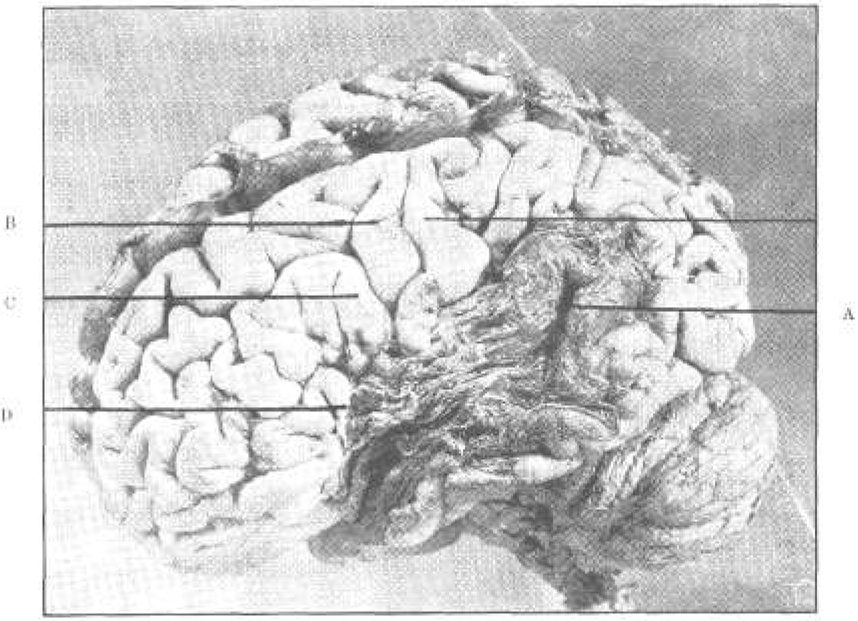
[1] Read at the Pennsylvania State Medical Society, June 24, 1903.

FIG. 1.

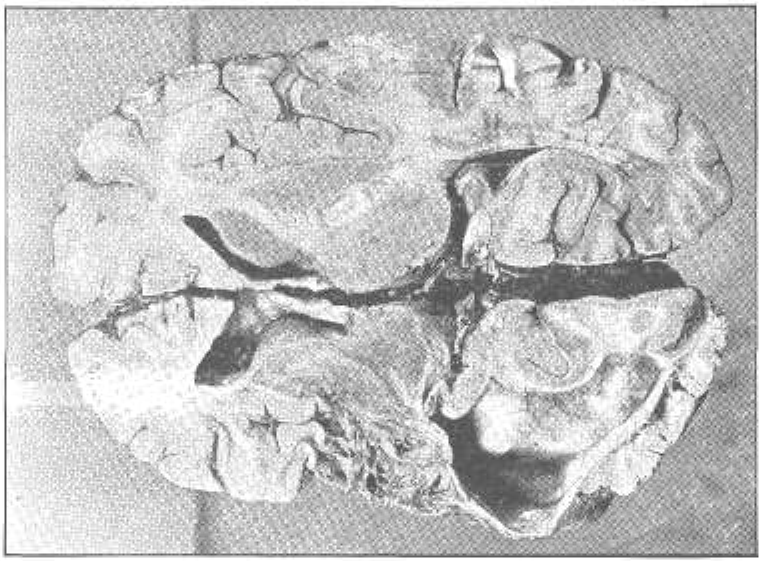


A. Dent in cyst wall. B. Ascending frontal convolution. C. Second frontal convolution. D. Third frontal convolution.

a remnant of word hearing left. She was not deaf to sound. While in the hospital she had several convulsions and several attacks of unconsciousness. She had chronic nephritis and died in a uræmic attack in April, 1902.

A necropsy was made the same day. Examination revealed extensive destruction in the region of distribution of the left midcerebral artery. The destroyed area was covered over by a pseudocystic pial membrane. Fig. 1 gives a false impression in one regard, namely, the depression marked "A" is not, as it appears to be, a fissure surrounded by a convolution (the angular gyre), but merely a dent made in the cyst wall at the time the photograph was taken. The lower halves of the ascending frontal and ascending parietal convolutions were completely destroyed; the upper halves were somewhat atrophied. Nothing remained of the island of Reil and only a small portion of Broca's convolution. The supramarginal, angular, and first temporal convolutions were absent. A part of the second temporal was also destroyed. The basal ganglia were quite a little smaller on the left than on the right, and the left internal capsule was atrophied. The anterior half of the posterior limb of the capsule was more affected than the posterior half. (Fig. 2.) The posterior horn and middle portion of the left ventricle were much enlarged and the outer wall was entirely lateral membranous, the cortex and underlying white matter being entirely

FIG. 2.

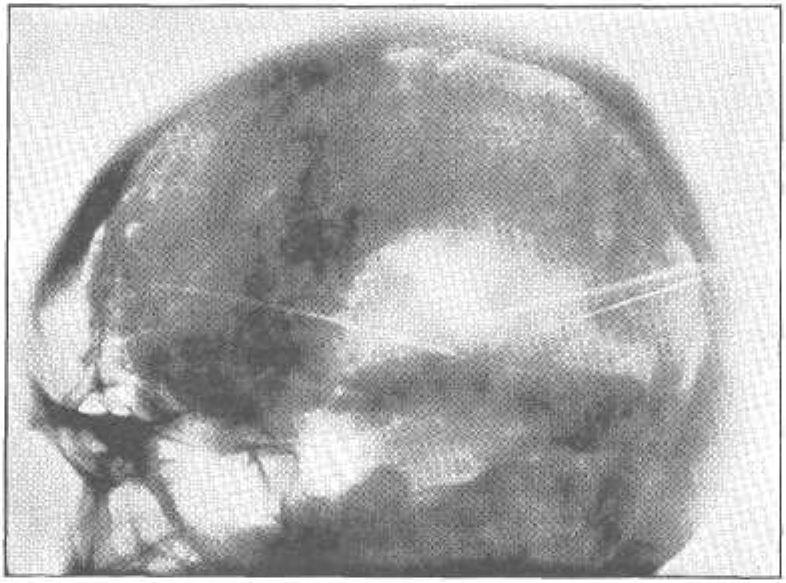


Horizontal section of brain, showing atrophy of left side.

destroyed. It is remarkable that the patient was not completely word deaf. The amount of speech hearing she possessed must have been due to the education and vicarious action of the right temporosphenoidal lobe.

The case is interesting in many ways, for example, as regards aphasia and differences in vascular distribution, for it is probable that there is quite a variation in the arterial distribution in different brains, but I wish to use it here simply as showing the possibilities of skiagraphy in the hands of an expert such as my friend Dr. Pfahler.

FIG. 3.



Skiagraph showing the outline of the skull, the frontal sinuses, the orbits, the base of the skull. The middle meningeal artery, the division between the cerebrum and the cerebellum, and the light area in the cerebrum corresponding exactly to the area of softening.

Remarks on Cerebral Skiagraphy. By G. E. Pfahler, M.D.

At the February meeting of the College of Physicians of Philadelphia,[1] I demonstrated, in connection with the case reported by Dr. Mills, that brain tumors can be skiagraphed. Some of these skiagraphs showed the absence of brain tissue, others a disturbance of brain tissue without any actual absence. Basing my opinion upon these facts I believed that an area of softening of the brain could be shown. My first opportunity to test this point developed at the autopsy in Dr. Burr's case just reported. The brain was replaced in the skull and an attempt made to photograph it by means of the Roentgen rays. I first made a negative of the affected and then one of the opposite side, because I believed that possibly the normal side could be used for comparison with the diseased. The present case demonstrates, however, that this cannot be relied upon, for the lesion was shown upon both negatives, but with much more definite outline on that of the affected side. In studying a skiagraph it is important to recognize the shadows of normal structures first. If these are not shown well, abnormal shadows must be accepted with doubt. If, however, normal shadows are clear and definite, I believe that abnormal shadows will be of great value in making a diagnosis.

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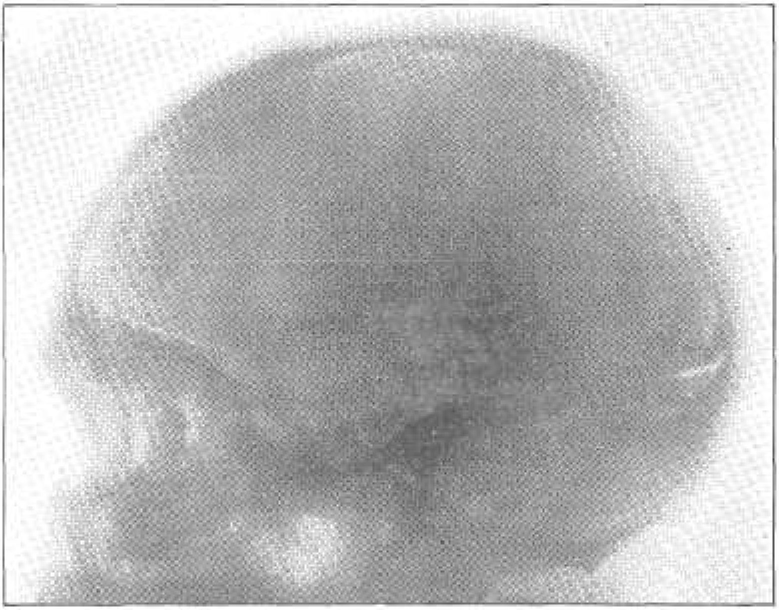
[1] Philadelphia Medical Journal, February 8, 1902.

FIG. 4.



Skiagraph showing a normal brain in a skull prepared for experiment, also shows the outline of the skull, the two tables of the skull, the frontal sinus, which is unusually small, the sphenoidal and mastoid cells, and the external auditory meatus. The division between the cerebrum and the cerebellum may also be seen.

In the skiagraph which I show of the affected side may be noticed the following normal structures: The outline of the skull, the orbits, the ethmoidal and sphenoidal cells, the sella turcica, the external auditory meatus, the groove of the middle meningeal artery, the division between the cerebrum and the cerebellum, and the peculiar striations which probably correspond to the convolutions of the cerebellum. Irregular shadows are also seen which are suggestive of the convolutions of the brain.

Above the cerebellum and petrous portion of the temporal bone may be seen the light area which corresponds to the outline of the area of degeneration. A light space is seen above the sella turcica which shows where the brain tissue had not been properly replaced. The saw cuts may also be seen. (Normal brain, Fig. 4.)

From an experience in fifty-five brain examinations I am convinced that the Roentgen rays will be of considerable value in the diagnosis of cerebral lesions. I believe that we shall be able to diagnose most large lesions, such as new-growths, softening, hemorrhage, and abscess.

REPORT OF A CASE OF TUMOR OF THE BRAIN, AN ENDOTHELIOMA OF THE DURA; OPERATION; RECOVERY; DEATH IN 108 DAYS FROM RECURRENCE OF THE DISEASE.

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A boy, aged fifteen years, born in America, of Russian-Jewish parentage, was seen first with Dr. Theodore Sprissler on January 25, 1903.

He had been perfectly well until ten weeks before, when he misbehaved at school, and his teacher, becoming angry, seized him by the neck and bumped the right side of his head against a wall. He came home and immediately complained of headache. Shortly after this, still complaining of headache, he was taken to see Dr. Theodore Sprissler, who examined his head carefully and could find no evidence whatever upon the scalp of any violence, as there was no abrasion, no bruise, nor swelling. He did, however, have some slight fever—a little over 100° F.—and Dr. Sprissler sent him home and to bed, fearing that he might be contracting typhoid fever, but he did not think that the knock on the head had anything to do with his condition. This fever soon passed away.

He did not see him again for some little time, and then only for headache, which the boy always complained of as being localized in his right temporal region. Of late this headache had become more marked and there had been some vomiting, but there were periods of entire freedom from pain.

Thinking the headache might be due to some ocular defect, he was sent to Dr. F. M. Perkins on January 20, 1903, who made this record:

"*Examination.* No external variation from normal appearances. Vision normal. Pupils respond to light, convergence, and accommodation. Neither eye goes out under covering hand; has full